APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,957	11/30/2001	Joachim Frank	DE920000055US1 (590.080)	5057

			EXAMINER
35195	7590	01/18/2006	VO, HUYEN X

FERENCE & ASSOCIATES
409 BROAD STREET
PITTSBURGH, PA 15143

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/997,957	FRANK ET AL.
	Examiner	Art Unit	
	Huyen X. Vo	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10-31-2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>19-49</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>19-49</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 November 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless – (a) the invention was known or used by others in this
> country, or patented or described in a printed publication in this or a foreign country, before the invention
> thereof by the applicant for a patent.

2.   Claim 47 is rejected under 35 U.S.C. 102(a) as being anticipated by Bonastre et

al. (IEEE Publication).

3.   Regarding claim 47, Bonastre et al. disclose a speech recognition processing an

incoming audio stream containing human speech from a plurality of speakers and

having at least two speaker models and/or speaker-specific dictionaries, comprising: a

detector which detects a speaker change in the incoming audio stream (*sections 2.1-2.2*

on page 1178 and referring to abstract section); a gather which gathers speaker-specific

information with corresponding speaker-specific information of at least one

predetermined known speaker from among the plurality of speakers thus recognizing

the at least one predetermined speaker (*sections 2-3.2, input speech is processed to*

extract speech features, which are then compared with speech models of each enrolled

speaker to determine a match); and an interchanger which interchanges between the at

least two speaker-specific dictionaries dependent on the detected speaker change and

the corresponding recognized speaker (*sections 2-3.2, extracted features must be*

compared with speech models of a plurality of speakers enrolled before runtime).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 19-20, 22-26, 28-31, 33-39, 41-46, and 48-49 are rejected under 35

U.S.C. 103(a) as being unpatentable over Bonastre et al. (IEEE Publication) in view of

Glickman et al. (US 6067059).

6.   Regarding claims 19, 31, 34, and 48, Bonastre et al. disclose a method,

apparatus, and a program storage device readable by machine for processing a

continuous audio stream containing human speech from a plurality of speakers related

to at least one particular transaction, comprising the steps of: identifying a known

speaker from among the plurality of speakers (*abstract section page 117*); digitizing the

continuous audio stream (*ADC is inherently included in a digital system*); detecting a

speaker change in the digitized audio stream (*sections 2.1-2.2 on page 1178 and

referring to abstract section*); performing a speaker recognition if a speaker change is

detected (*section 3 on page 1179*); and wherein each speaker is processed using a

different dictionary of different topics (*each enrolled speaker has their own models

stored in the system before runtime*).

Bonastre et al. fail to disclose the step of transcribing at least part of the

continuous audio stream if a predetermined speaker is recognized. However, Glickman

et al. teach the step of transcribing at least part of the continuous audio stream if the

known speaker is recognized (*col. 5, In. 30-67*).

Since Bonastre et al. and Glickman et al. are analogous art because they are

from the same field of endeavors, it would have been obvious to one of ordinary skill in

the art at the time of invention to modify Bonastre et al. by incorporating the teaching of

Glickman et al. in order to provide automatic closed-caption using speaker-dependent

models to enhance speech recognition accuracy.

7.   Regarding claims 25, 35, 39, 43, and 49, Bonastre et al. disclose a method,

apparatus, and program storage device readable by machine for processing a

continuous audio stream containing human speech of a plurality of speakers related to

at least one particular transaction, comprising the steps of: identifying a known speaker

from among the plurality of speakers (*abstract section page 117*); digitizing the

continuous audio stream (*ADC is inherently included in digital systems*); detecting a

speaker change in the digitized audio stream (*sections 2.1-2.2 on page 1178 and

referring to abstract section*); performing a speaker recognition if a speaker change is

detected (*section 3 on page 1179*); and wherein each speaker is processed using a

different dictionary of different topics (*each enrolled speaker has their own models

stored in the system before runtime*).

Bonastre et al. fail to disclose the step of indexing the audio stream with respect to the detected speaker change if the known speaker is recognized. However, Glickman et al. teach the step of indexing the audio stream with respect to the detected speaker change if the known speaker is recognized (*col. 5, In. 30-67, labeling "Bob" or "Alice" to transcribed text of corresponding audio segments*).

Since Bonastre et al. and Glickman et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Bonastre et al. by incorporating the teaching of Glickman et al. in order to enable the system to use speaker-specific speech recognition models for a particular speaker to improve speech recognition accuracy.

8.   Regarding claim 42, Bonastre et al. disclose an apparatus according to claim 39, further comprising a monitor which continuously monitors a real-time continuous audio stream and performing the steps of: digitizing the continuous audio stream (*ADC is inherently included in a digital system*); detecting a speaker change in the digitized audio stream (*sections 2.1-2.2 on page 1178 and referring to abstract section*); performing a speaker recognition if a speaker change is detected (*section 3 on page 1179*). Bonastre et al. fail to disclose the step of transcribing at least part of the continuous audio stream if a predetermined speaker is recognized. However, Glickman et al. teach the step of transcribing at least part of the continuous audio stream if the known speaker is recognized (*col. 5, In. 30-67*).

Since Bonastre et al. and Glickman et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Bonastre et al. by incorporating the teaching of Glickman et al. in order to provide automatic closed-caption using speaker-dependent models to enhance speech recognition accuracy.

9.   Regarding claims 20, 26, 36-37, and 44-45, Bonastre et al. fail to disclose a method, apparatus and computer readable medium according to claims 19, 25, 31, and 39, comprising the further step of protocolling time information for detected speaker changes. However, Glickman et al. further teach the step of protocolling time information for detected speaker changes (*timing info 332 in figure 3*).

Since Bonastre et al. and Glickman et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Bonastre et al. by incorporating the teaching of Glickman et al. in order to improve alignment of audio segments with corresponding transcribed text segments.

10.   Regarding claims 22-23, 28-29, 38, and 46, Bonastre et al. further to disclose a method, apparatus, and computer readable medium according to claims 19, 25, 31, and 39, wherein the step of detecting a speaker change is accomplished by use of at least one characteristic audio feature, in particular features derived from the spectrum of the audio signal (*see figure 2, parameter extraction and feature vector of speech signal*);

and wherein the step of performing a speaker recognition involves the particular steps

of calculating a speaker signature from the audio stream and comparing the calculated

speaker signature with at least one known speaker signature (*see figure 2, parameter*

extraction and feature vector of speech signal. Audio characteristics or speech

features/parameters are signature of the target speaker).

11.   Regarding claims 24 and 30, Bonastre et al. fail to disclose a method and

apparatus according to claims 19 and 25, for use in a speech recognition or voice

control system comprising at least two speaker-specific speaker models and/or

dictionaries, wherein interchanging between the at least two speaker-specific

dictionaries dependent on the detected speaker change and the corresponding

recognized speaker. However, Glickman et al. further teach a speech recognition or

voice control system comprising at least two speaker-specific speaker models and/or

dictionaries, wherein interchanging between the at least two speaker-specific

dictionaries dependent on the detected speaker change and the corresponding

recognized speaker (*col. 5, lines 43-62*).

          Since Bonastre et al. and Glickman et al. are analogous art because they are

from the same field of endeavors, it would have been obvious to one of ordinary skill in

the art at the time of invention to further modify Bonastre et al. by incorporating the

teaching of Glickman et al. in order to improve speech recognition accuracy.

12.   Regarding claims 33 and 41, Bonastre et al. fail to specifically disclose an
apparatus according to claims 31 and 39, further comprising a scanner which
automatically scans a continuous audio record, in particular a continuous audio stream
recorded on a data or a signal carrier, and for detecting speaker changes in the
continuous audio record. However, Glickman et al. further inherently teach such a
scanner (*col. 2, lines 23-37, audio and text data are stored as two files, and files are
stored in conventional disks or memory*).

       Since Bonastre et al. and Glickman et al. are analogous art because they are
from the same field of endeavors, it would have been obvious to one of ordinary skill in
the art at the time of invention to further modify Bonastre et al. by incorporating the
teaching of Glickman et al. in order to enable the system to perform speaker change
detection and recognition on any source of audio data.

13.   Claims 21, 27, 32, and 40 are rejected under 35 U.S.C. 103(a) as being
unpatentable over Bonastre et al. (IEEE Publication) in view of Glickman et al. (US
6067059), as applied to claim 19, and further in view of Kimber et al. (US 5598507).

14.   Regarding claims 21, 27, 32, and 40, the modified Bonastre et al. fail to disclose
a method, apparatus, and computer readable medium according to claims 19, 25, 31,
and 39, wherein the step of detecting a speaker change and/or the step of performing a
speaker recognition is/are preceded by the further step of detecting non-speech
boundaries between continuous speech segments. However, Kimber et al. further

teach wherein the step of detecting a speaker change and/or the step of performing a

speaker recognition is/are preceded by the further step of detecting non-speech

boundaries between continuous speech segments (*col. 12, ln. 1-10, specifically*

elements 212 or 216 in figure 12).

Since the modified Bonastre et al. and Kimber et al. are analogous art because

they are from the same field of endeavors, it would have been obvious to one of

ordinary skill in the art at the time of invention to further modify Bonastre et al. by

incorporating the teaching of Kimber et al. in order to improve speech recognition

accuracy.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Huyen X. Vo whose telephone number is 571-272-7631.

The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for

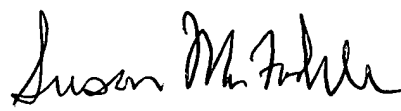the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

HXV   1/11/2006

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SUSAN MCFADDEN
PRIMARY EXAMINER